Main Product Characteristics:

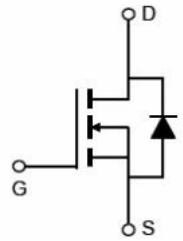
V_{DSS}	60V
R_{DS}(on)	5.8mΩ (typ.)
I_D	80A



TO-263 (D2PAK)



Marking



Schematic Diagram

Features and Benefits:

- Advanced MOSFET process technology
- Special designed for PWM, load switching and general purpose applications
- Ultra low on-resistance with low gate charge
- Fast switching and reverse body recovery
- 150℃ operating temperature

Description:

It utilizes the latest processing techniques to achieve the high cell density and reduces the on-resistance with high repetitive avalanche rating. These features combine to make this design an extremely efficient and reliable device for use in power switching application and a wide variety of other applications.

Absolute Max Rating:

Symbol	Parameter	Max.	Units
I_D @ TC = 25°C	Continuous Drain Current, V_{GS} @ 10V ①	80	A
I_{DM}	Pulsed Drain Current ②	320	
P_D @TC = 25°C	Power Dissipation ③	108	W
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-to-Source Voltage	± 20	V
E_{AS}	Single Pulse Avalanche Energy @ L=0.5mH	410	mJ
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to +150	°C

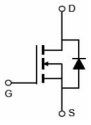
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-case ③	—	1.4	℃/W

Electrical Characterizes @T_A=25℃ unless otherwise specified

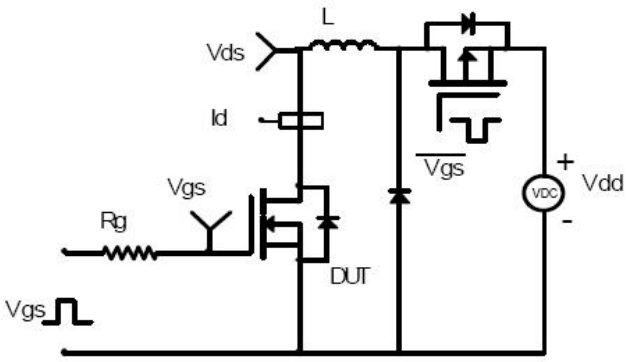
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	60	—	—	V	V_{GS} = 0V, I_D = 250μA
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	5.8	8	mΩ	V_{GS}=10V,I_D =30A
$V_{GS(th)}$	Gate threshold voltage	2	—	4	V	V_{DS} = V_{GS}, I_D =250μA
I_{DSS}	Drain-to-Source leakage current	—	—	1	μA	V_{DS} =60V,V_{GS} = 0V
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	V_{GS} =20V
		—	—	-100		V_{GS} = -20V
Q_g	Total gate charge	—	71.2	—	nC	I_D = 30A,
Q_{gs}	Gate-to-Source charge	—	16.4	—		V_{DS}=30V,
Q_{gd}	Gate-to-Drain("Miller") charge	—	23.3	—		V_{GS} = 15V
$t_{d(on)}$	Turn-on delay time	—	18.8	—	ns	V_{GS}=10V, V_{DS}=30V, R_{GEN}=3Ω I_D = 30A
t_r	Rise time	—	11.8	—		
$t_{d(off)}$	Turn-Off delay time	—	107.3	—		
t_f	Fall time	—	58.4	—		
C_{iss}	Input capacitance	—	3934	—	pF	V_{GS} = 0V V_{DS} = 50V f = 1MHz
C_{oss}	Output capacitance	—	209	—		
C_{rss}	Reverse transfer capacitance	—	191	—		

Source-Drain Ratings and Characteristics

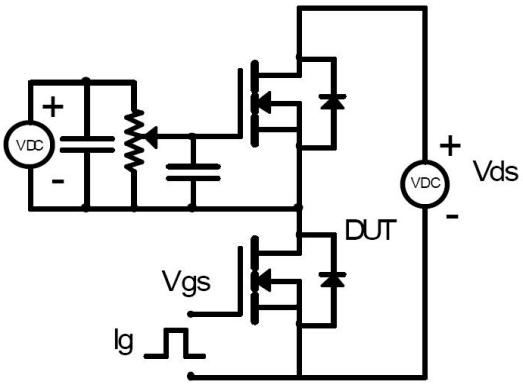
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	80	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode)	—	—	320	A	
V_{SD}	Diode Forward Voltage	—	0.89	1.2	V	I_S=30A, V_{GS}=0V
trr	Reverse Recovery Time	—	31.4	—	ns	I_S=30A,di/dt=100A/us
Qrr	Reverse Recovery Charge	—	31.1	—	nC	

Test Circuits and Waveforms

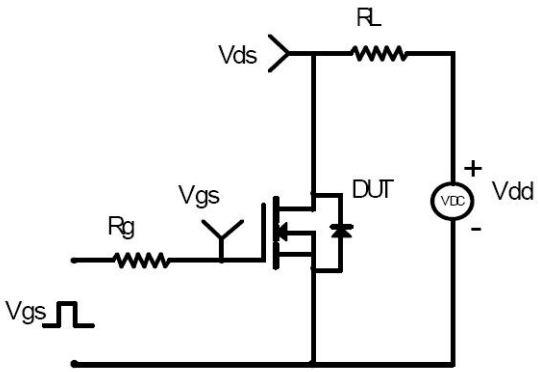
EAS Test Circuit:



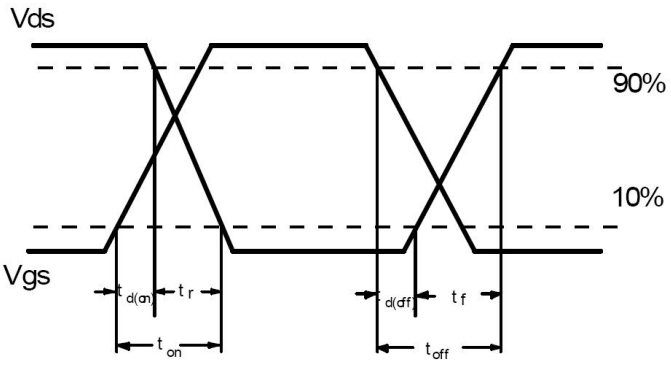
Gate Charge Test Circuit:



Switching Time Test Circuit:



Switching Waveforms:



Notes:

①Calculated continuous current based on maximum allowable junction temperature.

②Repetitive rating; pulse width limited by max. junction temperature.

③The power dissipation PD is based on max. junction temperature, using junction-to-case thermal resistance.

Typical Electrical and Thermal Characteristics

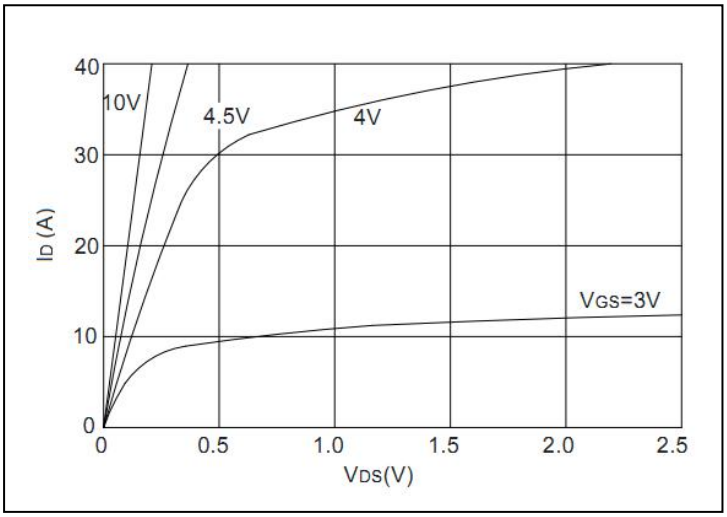


Figure1. Typical Output Characteristics

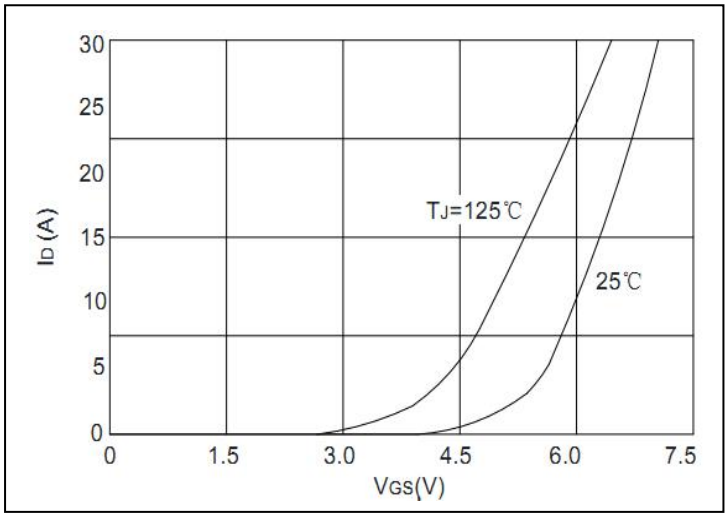


Figure2. Transfer Characteristics

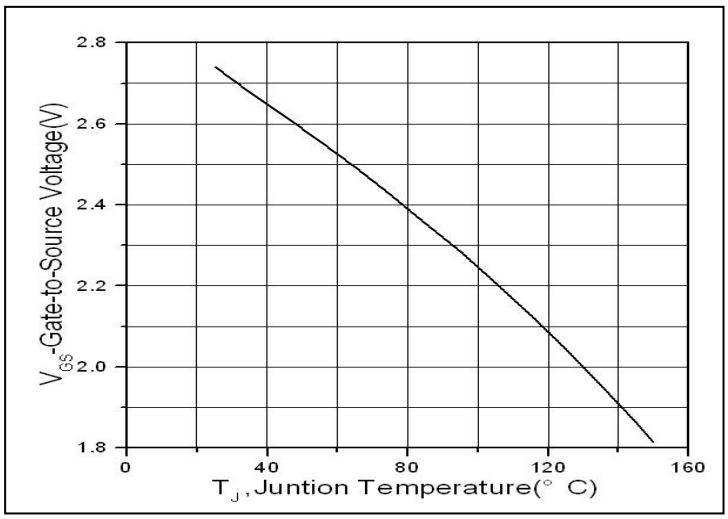


Figure 3. Gate to Source Cut-off Voltage

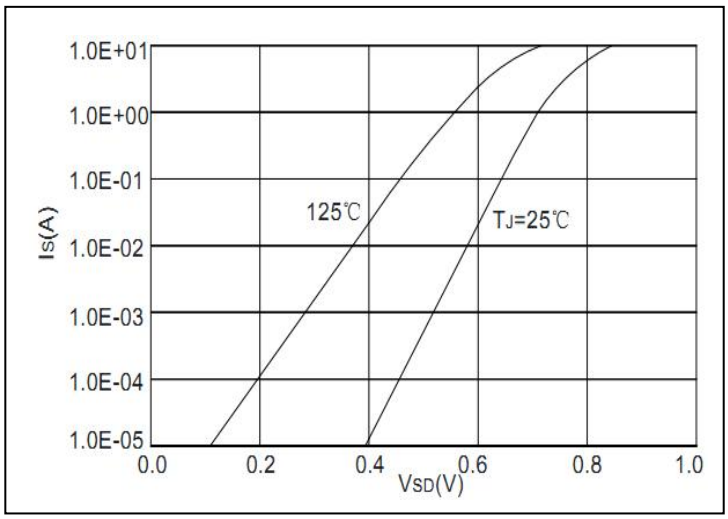


Figure 4. Body Diode Characteristics

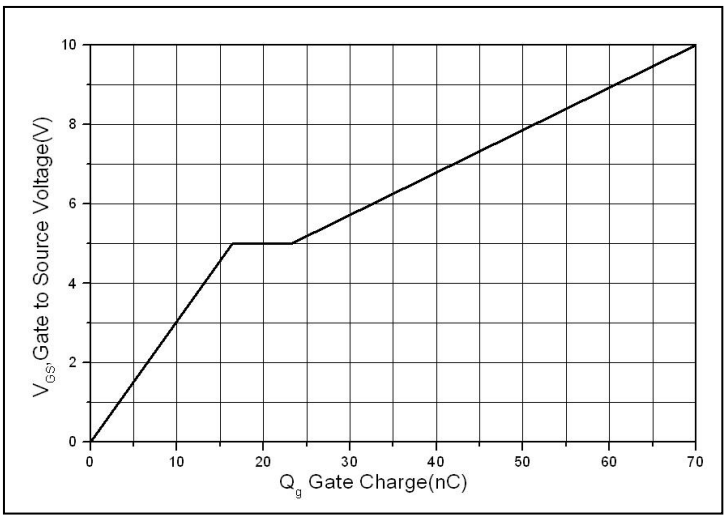


Figure5. Gate Charge

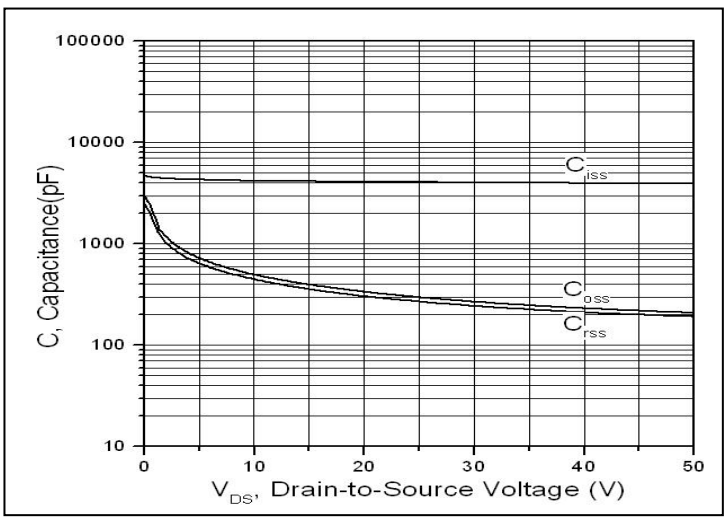


Figure6. Capacitance

Typical Electrical and Thermal Characteristics

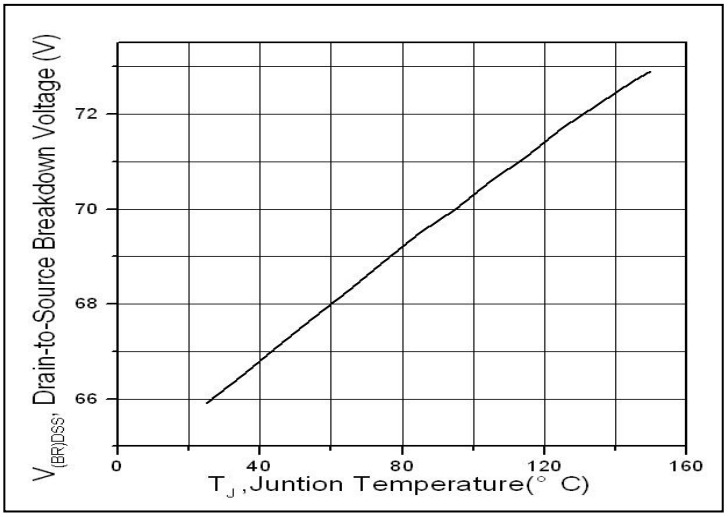


Figure7. Drain-to-Source Breakdown Voltage vs. Temperature

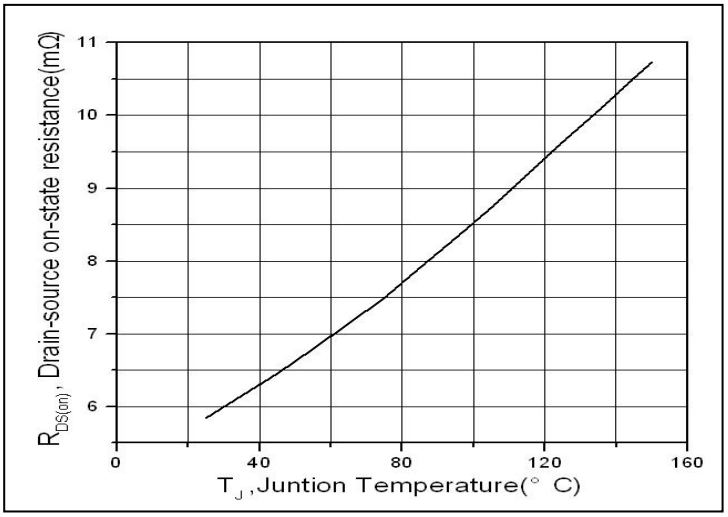


Figure8. Normalized On-Resistance vs. Junction Temperature

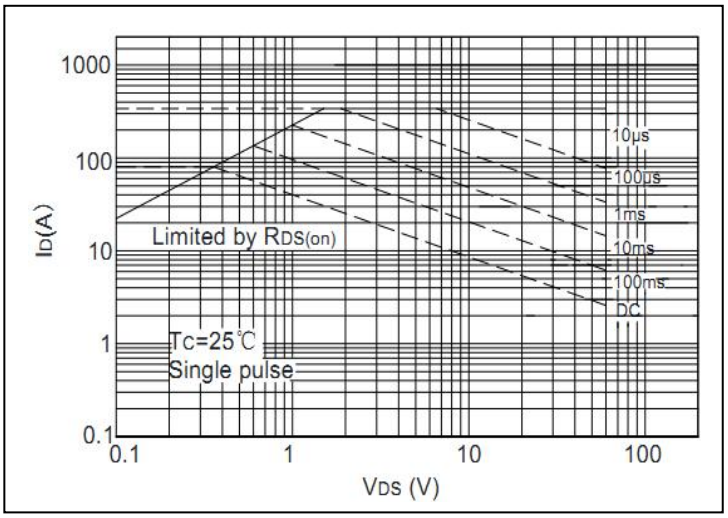


Figure9. Safe Operating Area

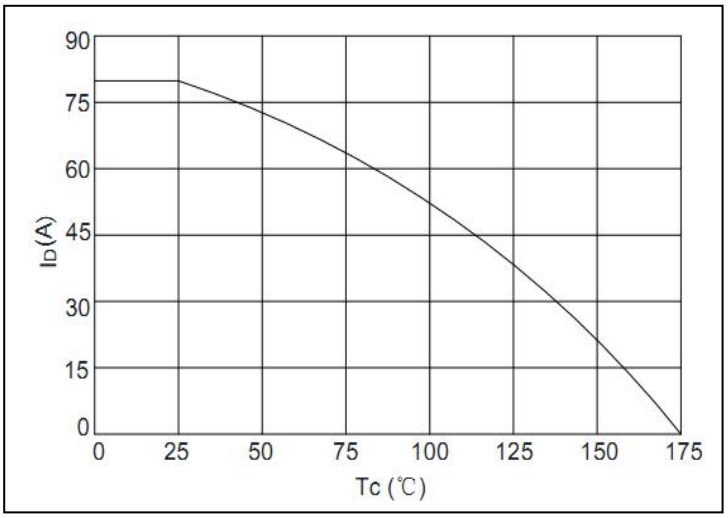


Figure10.Drain Current vs. Case Temperature

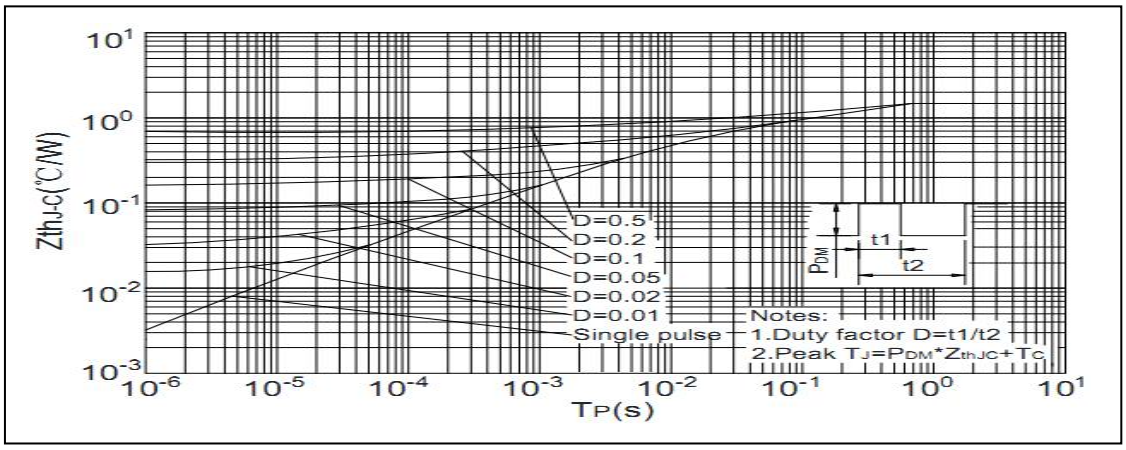
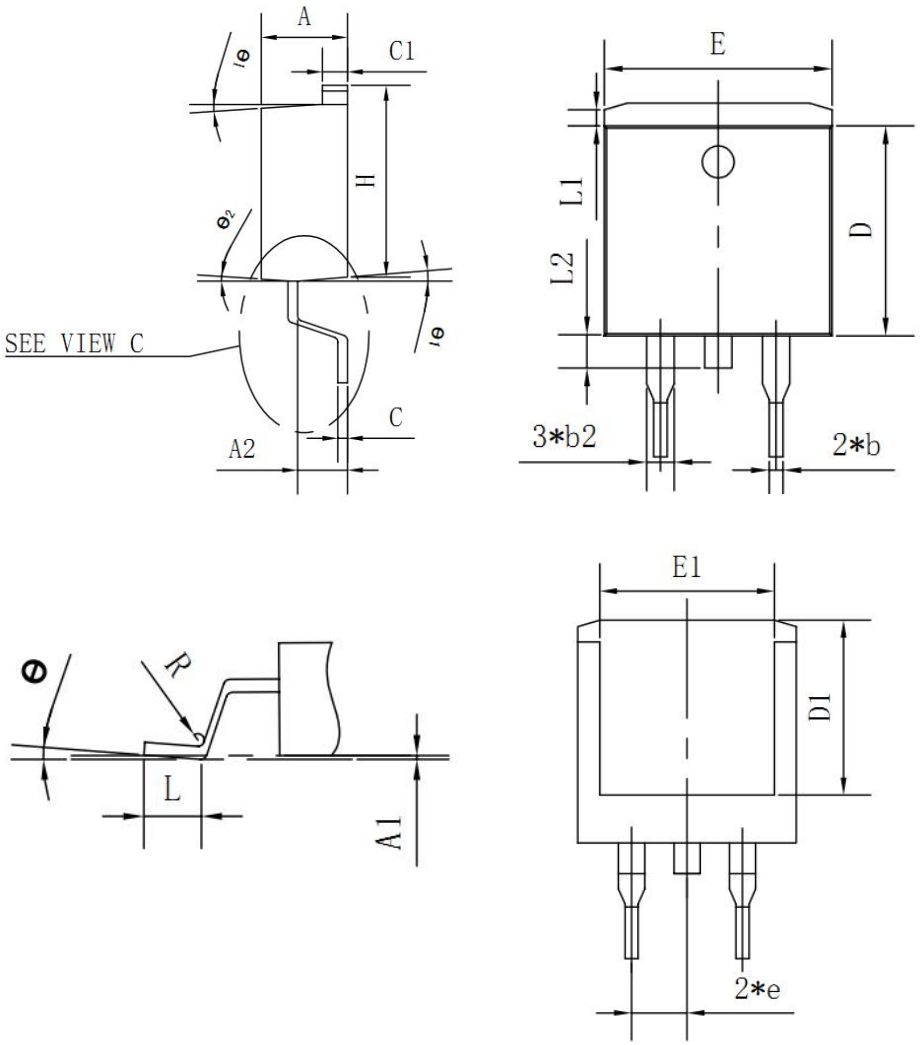


Figure11.Normalized Maximum Transient Thermal Impedance

Mechanical Data：

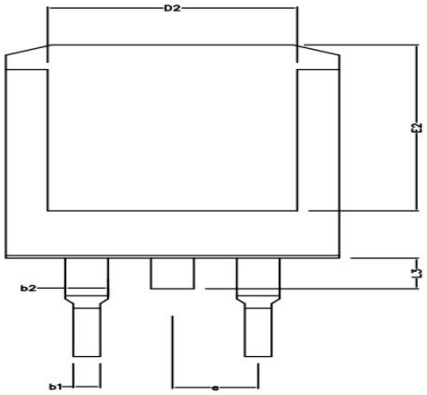
TO-263 Package Outline (Unit:mm)

Option 1

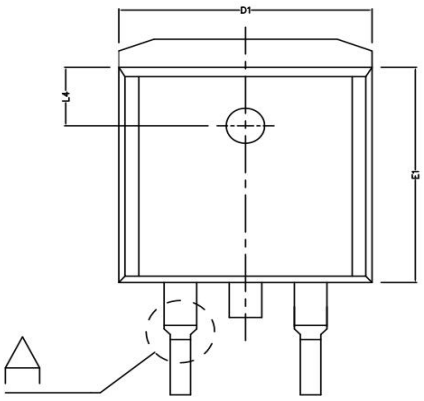


SYMBOL	MIN	NOM	MAX
A	4.35	4.47	4.60
A1	0.09	0.10	0.11
A2	2.30	2.40	2.50
b	0.70	0.80	1.00
b2	1.25	1.36	1.38
C	0.45	0.50	0.55
C1	1.29	1.30	1.31
D	9.10	9.20	9.30
D1	7.90	8.00	8.10
E	9.85	10.00	10.20
E1	7.90	8.00	8.10
H	15.30	15.50	15.70
e	-	2.54	-
L	2.34	2.54	2.74
L1	1.00	1.10	1.20
L2	1.30	1.40	1.50
R	0.24	0.25	0.26
θ	0°	4°	8°
θ1	4°	7°	10°
θ2	0°	3°	6°

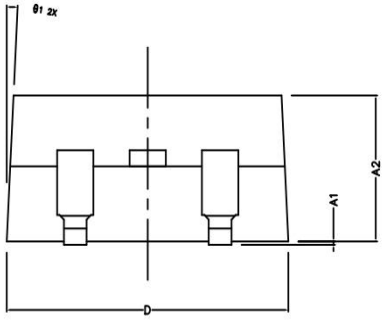
Option 2



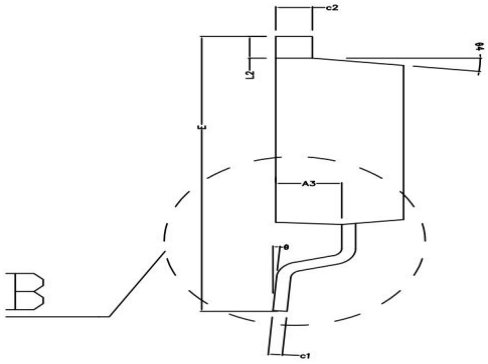
BOTTOM VIEW



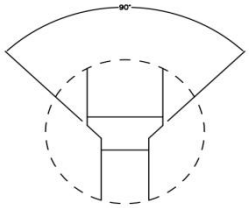
TOP VIEW



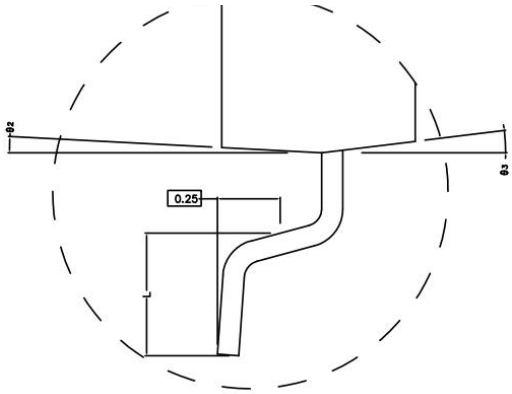
SIDE VIEW



SIDE VIEW



DETAIL A



	MIN	NORMAL	MAX
A1	0.020	–	0.200
A2	4.470	4.570	4.670
A3	2.300	2.350	2.400
b1	0.750	–	0.850
b2	1.220	–	1.320
c1	0.500	–	0.550
c2	1.300	–	1.350
D	9.780	9.880	9.980
D1		9.880REF	
D2		7.400REF	
E	14.900	15.100	15.300
E1	9.100	9.200	9.300
E2		8.100REF	
e		2.540REF	
L	2.100	2.300	2.500
L2	1.025		1.375
L3	1.300	1.500	1.700
L4	2.400	2.500	2.600
θ1		3° TYPE	
θ2		3° TYPE	
θ3		7° TYPE	
θ4		7° TYPE	
θ		0 ~ 8°	

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